Complex iliocaval reconstruction with nitinol stents

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Complex iliocaval reconstruction with self-expending nitinol stents

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Disclosure

Speaker name:

Tim Sebastian

I have the following potential conflicts of interest to report:

- ☐ Consulting
- ☐ Employment in industry
- ☐ Stockholder of a healthcare company
- ☐ Owner of a healthcare company
- ☐ Other(s)

- ☐ I do not have any potential conflict of interest

Why dedicated venous stents?

Expectations

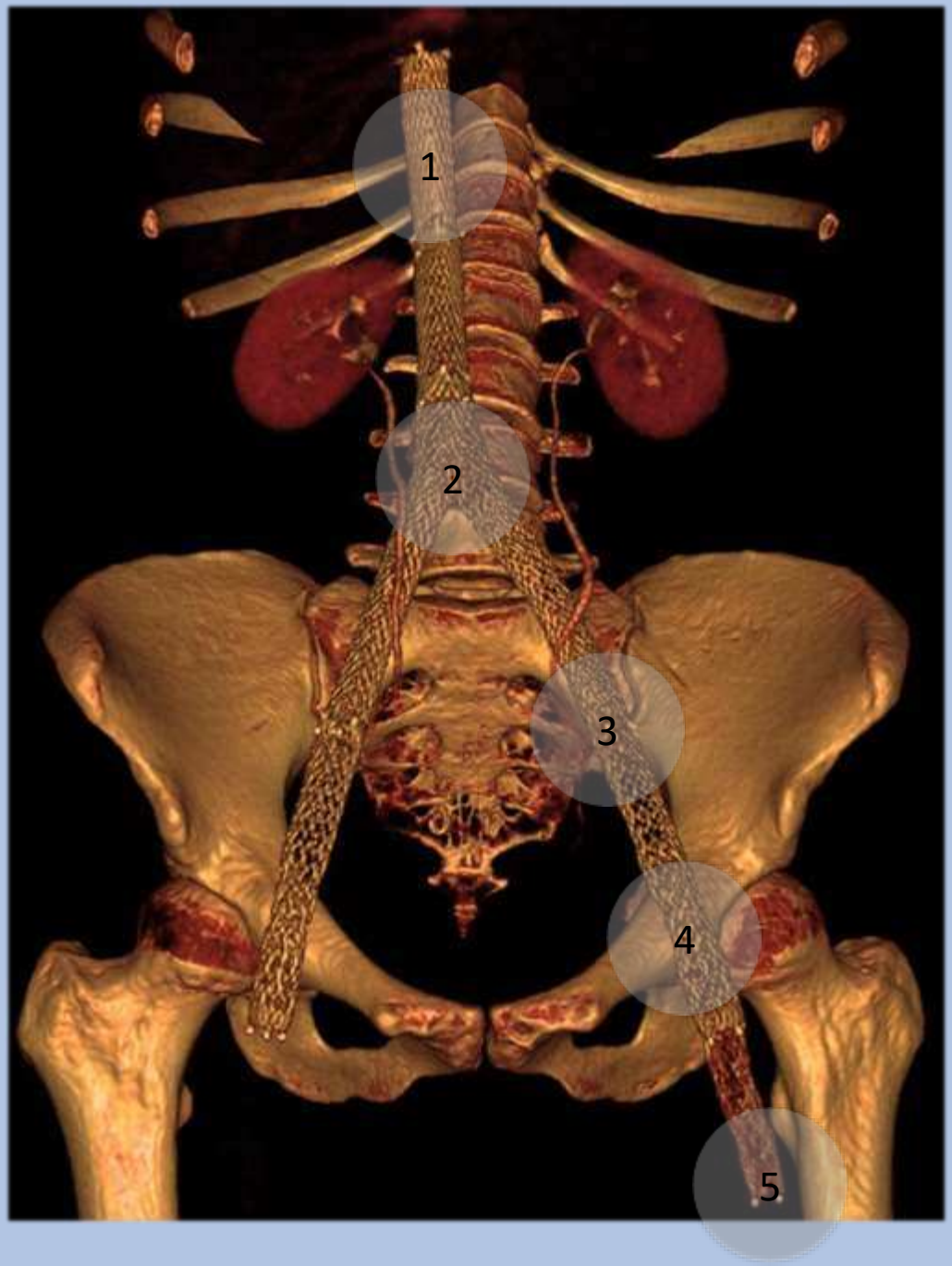
Precise deployment
Less foreshortening

Flexibility
Optimal accommodation to venous anatomy

Equally distributed radial force
Throughout stent length

Wall coverage
Protecting stent lumen from fibrotic tissue

Durability
At critical sites



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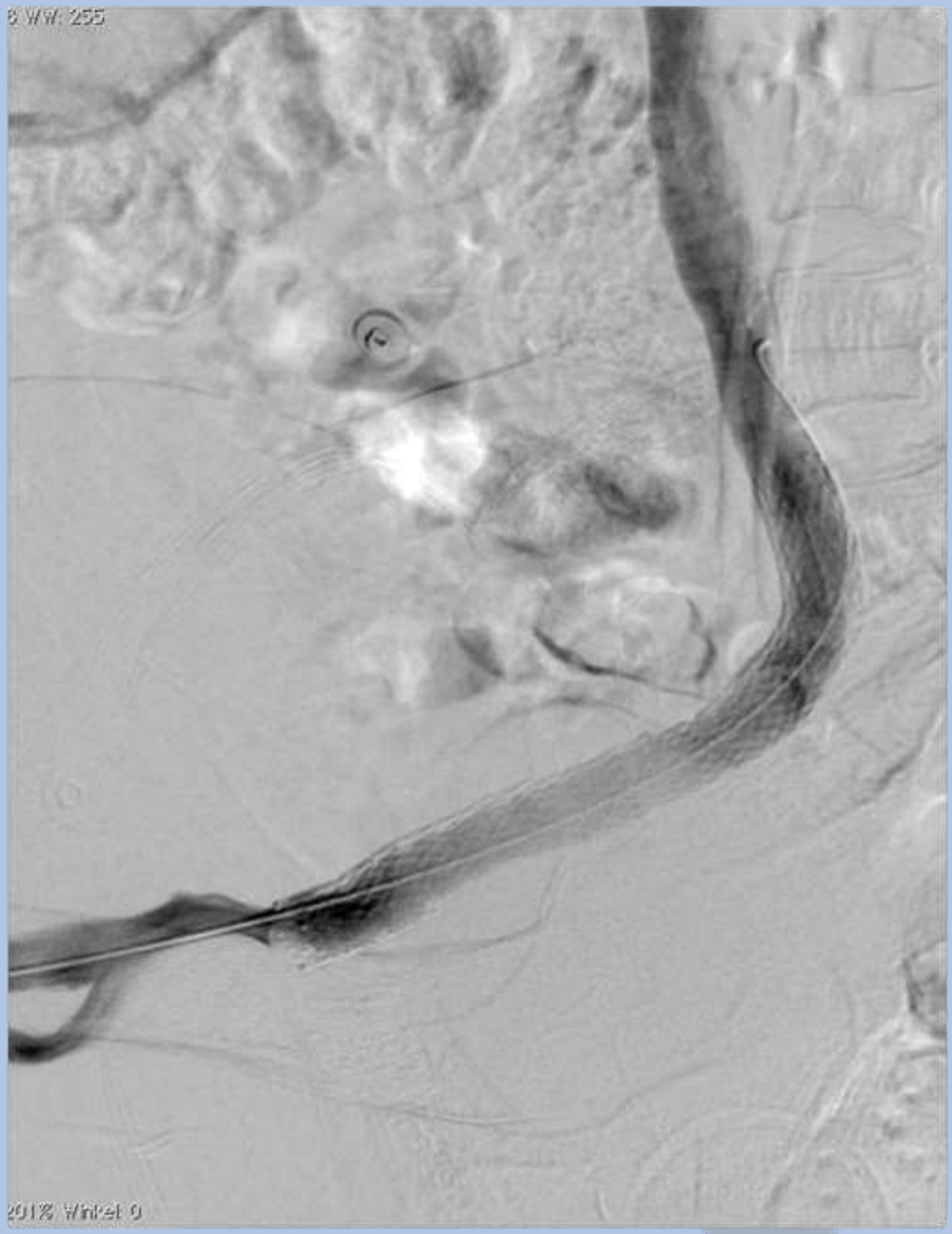

Swiss Venous Stent Registry

Prospective, on-going register including patients who received venous stents in Switzerland since 2011

From **274** patients in the registry**, 62** patients received caval or ilio-caval stent interventions **with nitinol stents** (212 excluded with ilio-femoral stents only)

Stents used:

Sinus XL, Sinus XL Flex, Sinus Superflex (Optimed, Ettlingen, Germany)

Zilver vena (Cook, Bloomington, USA)

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Baseline characteristics

Mean age 46 ± 18 years**,** 14 **women**

Index Diagnosis

33 post-thrombotic syndrome (53%)

17 acute thrombosis (27%)

12 non-thrombotic IVC compression (19%)

22 external IVC compression

16 cancer related, 3 retroperitoneal fibrosis, 1 echinococcosis, 1 abdominal aortic aneurysm, 1 vertebral screws

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Procedural data

Technical success	61 (98%)
CDT or PMT	21 (34%)
Iliac kissing stents	52 (84%)
IVC Filters	0
Mean number of stents	4.5 ± 1.9 stents
Mean stent length	45 ± 20 cm

Proximal landing zone

Right atrium 7 (11%) Suprarenal 42 (68%) Infrarenal 13 (21%)

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Procedural data

Type I: Single-segment stenosis:	**4 (6%)**
Type II: Multi-segment stenosis:	**14 (23%)**
Type III: Singe-segment occlusion:	**2 (3%)**
Type IV: Multi-segment occlusion:	**42 (68%)**

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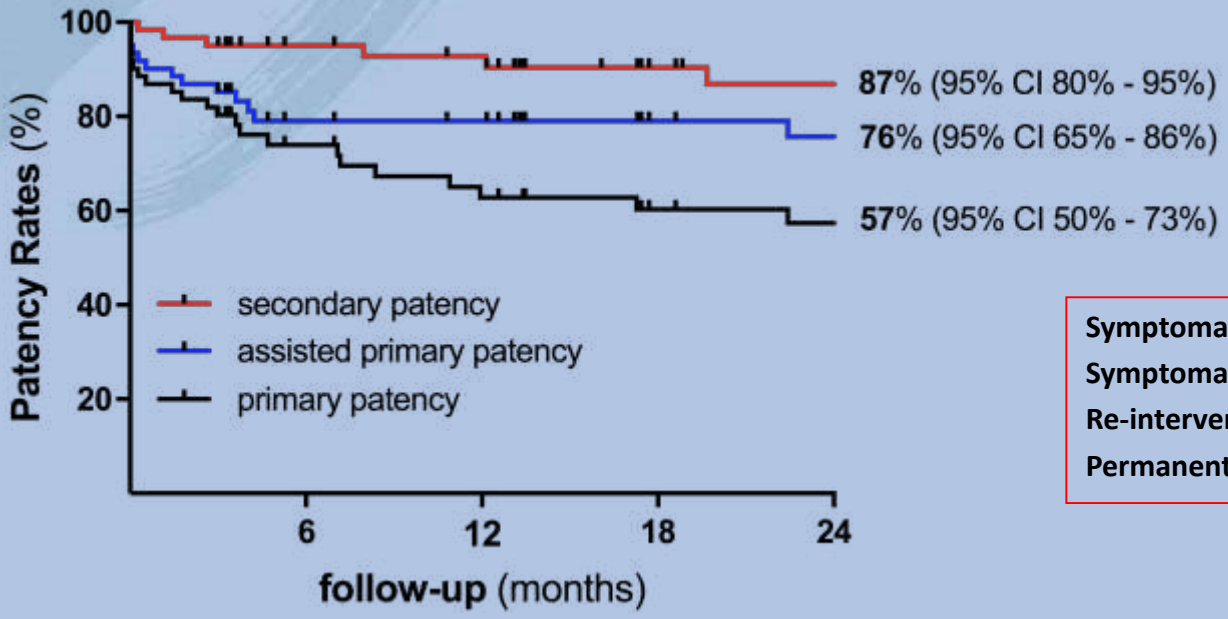
Patency Outcome

Mean follow up 21 months, **death** 4 (underlying malignant disease)



Symptomatic stent occlusion: 13 (21%)
Symptomatic stent stenosis: 10 (16%)
Re-intervention: 22 (36%)
Permanent loss of patency: 5 (8%)

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Clinical Outcome

Ulcer healing:	8/8 (100%)
Development of new ulcers:	0%
Freedom of symptoms[1]:	43%
Significant clinical improvement[1]:	48%

[1]: subjective symptom score as suggested by *Bozkaya et al*.

Decrease in Villalta score:	11.8 **to** 3.5

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Clinical Outcome

On-going anticoagulation therapy	56 (92%) patients
DOACs	40 (66%) patients
Vitamin K antagonists	14 (23%) patients
LMWH	2 (3%) patients
+ P2Y12 antagonists	7 (11%) patients

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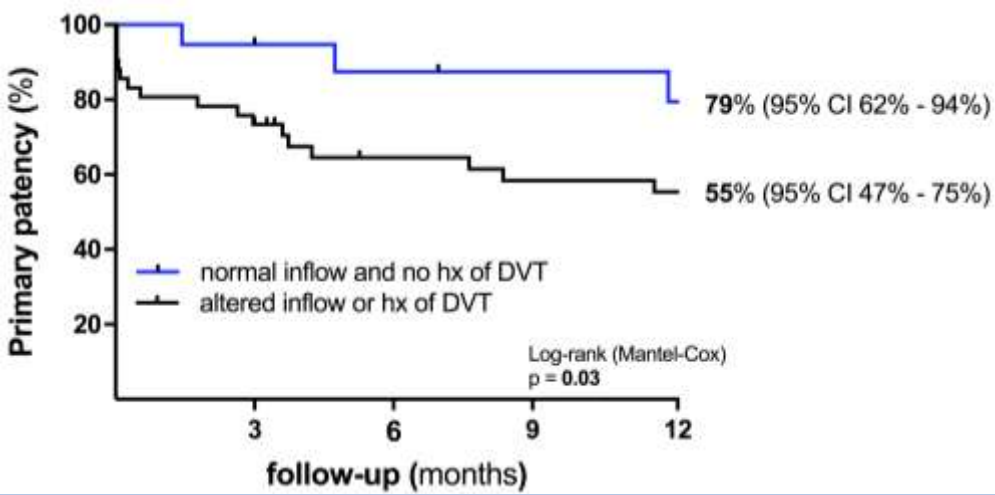
Predictors of patency loss

Patients with a history of deep vein thrombosis and/or posthrombotic leg inflow veins are at high risk for primary patency loss.



Stenting below the inguinal ligament was not associated with loss of primary patency in our cohort.

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What's in the literature

Selection of recent publications on ilio-caval stent reconstuction

	N	Follow Up (months)	Acute Cases	Technical Success	Main Stent	Primary Patency	Secondary Patency	Ulcer Healing	Anti-coagulation
De Graaf **2015**	40	15	15%	100%	Nitinol	70%	78%	N/A	VKA (min 6m)
Murphy **2016**	71	48	0%	85%	Wallstent Z-Stent	52%	93%	78%	VKA ASS (life)
Chick **2017**	120	24	48%	100%	Wallstent	87%	94%	88%	VKA/DOAC (min 6m) Clop (2m) ASS (life)
Erben **2018**	66	42	2%	90%	Wallstent Z-Stent	78%	91%	100%	OAC (life)
Sebastian **2018**	62	21	27%	98%	Nitinol	57%	87%	100%	VKA / DOACs (life)

IVC filter-associated: Murphy (54%), Chick (100%), Erben (38%)

Conclusion

Primary patency rate beyond 2 years for nitinol stents is >55%

Secondary interventions are often necessary to maintain patency, most likely due to **impaired venous stent inflow**

Secondary patency rates can be as high as 90%

Role of **anticoagulation** / **anti-platelet** therapy is unclear

Data for nitinol stents is similar compared to Wallstents

Thank you for your attention.